PUBLIC HEALTH

LONDON: THE SOCIETY OF MEDICAL OFFICERS OF HEALTH
Tavistock House South, Tavistock Square, W.C.1

No. 4.-Vol. LXVII. MONTHLY PRICE 2s. 6d. ANNUAL SUBSCRIPTION 31s. 6d. JANUARY - 1954

PROTECTIVE FOODS IN WINTER

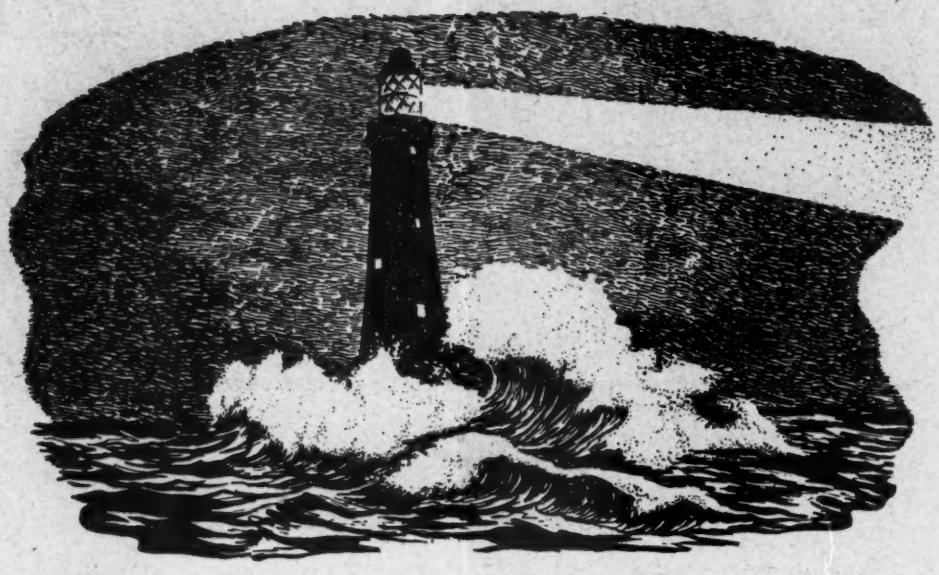
During the winter months it is specially important that a well-balanced diet containing a good supply of vitamins should be provided to give added protection against infection.

Marmite is a useful protective food, which provides naturally occurring vitamins of the B_2 complex in a palatable form. An appetising hot drink can be made by stirring a teaspoonful of Marmite into a cupful of boiling water or hot milk.

A special clinic pack of Marmite in 4-oz. tins is available for re-sale at welfare centres; literature for distribution to mothers attending these centres is available free on request.

MARMITE
yeast extract
contains
RIBOFLAVIN (*vitamin B_2*) 1.5 mg. per oz. NIACIN (*nicotinic acid*) 16.5 mg. per oz.
PH 5401 THE MARMITE FOOD EXTRACT CO., LTD., 35, SEETHING LANE, LONDON, E.C.3

Throughout the Country
FAILING LACTATION
is being replaced by
SUCCESSFUL BREASTFEEDING
with the aid of
LACTAGOL
THE GALACTAGOGUE
Samples for clinical trial and specially reduced prices from Infant Welfare Dept., Lactagol Ltd., Mitcham



FOUNDED ON A ROCK

For centuries, the many lighthouses around our shores have warned of treacherous rocks and shoals and guided shipping into the right channels. Without these safeguarding sentries of the seas many valuable lives and craft would be lost each year in the dangerous waters which surround our island home.

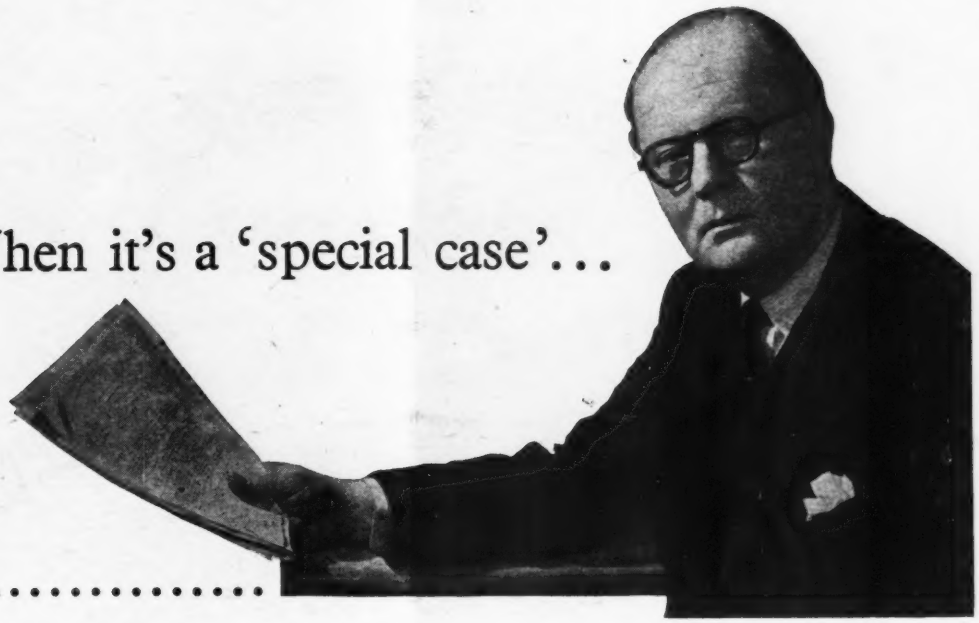
Babies, like frail craft, need protection if they are to be safely steered through the sometimes dangerous waters of infancy into the safe haven of adult health and happiness.

Cow & Gate, like a lighthouse, is well and truly founded on a rock of scientific research and experience now extending over half a century. It still stands alone as the most reliable and safe substitute if natural feeding fails.

COW & GATE MILK FOODS

5079 GUILDFORD, SURREY.

When it's a 'special case'...



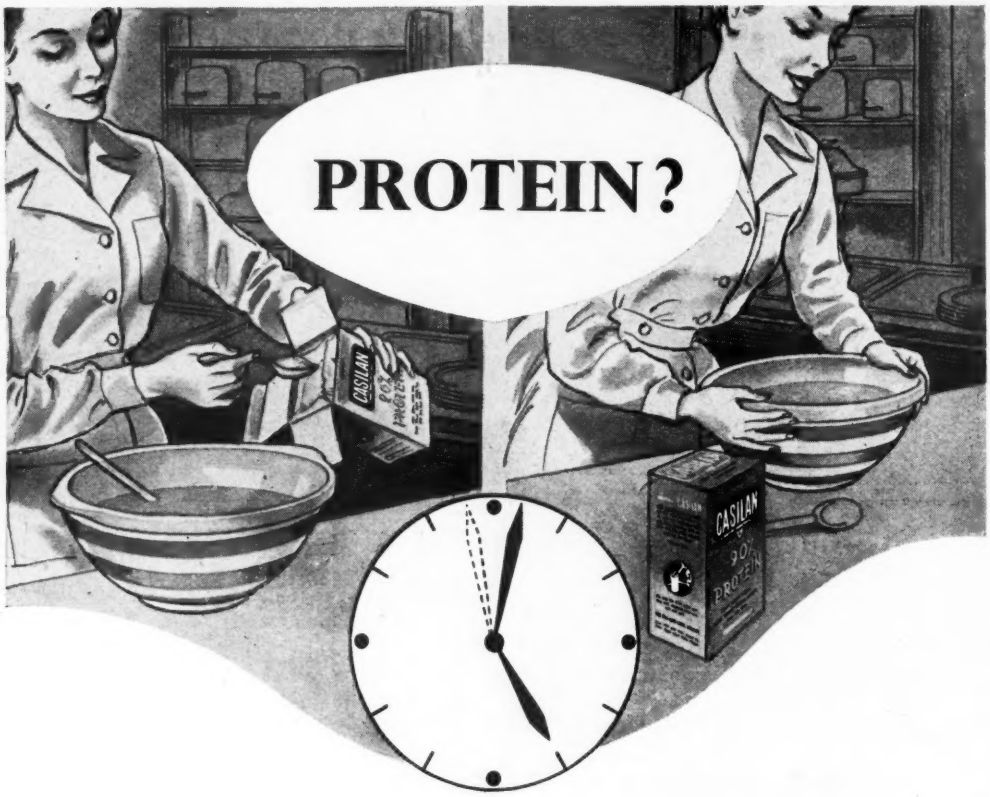
If community hygiene in all its multiplying aspects were a matter of a few simple rules, the work of Medical Officers of Health and Sanitary Inspectors would be a good deal easier! But there is always the 'special case', the odd set of conditions, the problem that requires individual consideration . . .

In such circumstances we believe it will be all to the advantage of your work to put the facts to the Deosan Laboratories. Much of the always-continuing research work of this organisation is concerned with enquiry into just such 'special cases'. From experience gained over many years it is more than likely, whatever the problem of hygiene arising in your work, that we can suggest a practical solution — and, moreover, aid you in your efforts to see it put into effect.

DEOSAN

leading authorities on community hygiene

DEOSAN LIMITED, Catering Hygiene Division, 345 Gray's Inn Road, London, W.C.1. (*One of the Milton Group of Companies*)



. . . just a moment!

TODAY's 'high protein' meals are pleasant to take, and remarkably simple to make. 'Using a spoon, just stir the Casilan gently (do not whisk) into cool milk, water or stock—then use the protein-enriched liquid for your cookery in the usual way.'

Yes, these are the mixing instructions appearing on the new Casilan carton. Small wonder that Casilan grows more and more popular in homes and hospital kitchens alike.

Casilan goes unobtrusively with almost any food or drink. And remember that every ounce of the powder provides more protein than four eggs or a pint and a half of milk!

CASILAN

™ Trade mark

WORTH ITS WEIGHT IN PROTEIN

8-oz., 40-oz. and 8-lb. containers

GLAXO LABORATORIES LIMITED, GREENFORD, MIDDLESEX BYRON 3434

PUBLIC HEALTH

OFFICIAL JOURNAL OF THE
SOCIETY OF MEDICAL OFFICERS OF HEALTH

Telephone: EUSton 3923 TAVISTOCK HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1 Telegrams: Epidauros, Westcent

No. 4. Vol. LXVII JANUARY, 1954

CONTENTS

PAGE

EDITORIALS

The Chief Medical Officer's Report 57
The District M.O.H. 57

SPECIAL ARTICLES

Fluoridation of Water Supplies. By Jean R. Forrest, L.D.S. 58
The Place of the County District Medical Officer of Health. By H. K. Cowan, M.D., D.P.H. 62
A Modern Approach to Tuberculosis. By H. D. Chalke, O.B.E., M.R.C.S., L.R.C.P., D.P.H. 66
The Medical Officer of Health and the Chest Physician. By Kenneth Marsh, D.M. 68
Health Education of the Public. By Dr. John Burton 69

PAGE

OBITUARY

T. Y. Finlay, M.D., F.R.C.P.E. 69

SOCIETY OF MEDICAL OFFICERS OF HEALTH

NOTICES

Metropolitan Branch 70
School Health Service Group 70
Services Group 70
North-Western Branch 70

OFFICIAL NOTICES

City of Nottingham E.C. 70

EDITORIAL

The Chief Medical Officer's Report

Sir John Charles and his colleagues are to be congratulated on bringing out the annual report "On the State of the Public Health"* in less than twelve months from the end of the year under review—a considerable achievement when the wide scope of its subject is noted. Sir John's own introduction, which perforce had to be written when the other contributions to which he draws attention had been completed, is a masterly "situation report" in the scholarly English which we expect from the C.M.O. On his first page he points out the paradox, so typical of our time, that we still have to estimate our state of communal health by the indices of sickness and death; but reminds us of Galen's *obiter dictum*, "Health is a form of harmony, in which the functions of body and mind are free to exercise in unimpaired capacity." This gives point to the later passage in which the C.M.O. discusses our present-day concept of personal hygiene and health care and regretfully points to the shortcomings of parents towards their children's physical well-being and towards their own, and to the need for the man in the street to become a working partner in the future development and deployment of the health services. Here is, in effect, a powerful plea for pressing on with health education at all ages and levels.

Sir John gives the Public Health Service particular food for thought when, towards the end of his introduction, he writes :—

"There is a repetitive regularity about the statement that Preventive Medicine is the Cinderella of the Health Services. Undoubtedly a disparity can be demonstrated between the expenditure on the two great divisions of medicine—curative medicine having the balance markedly in its favour. It has been argued with some force that an increased expenditure on Preventive Medicine would obtain a consequential reduction in the demands on the treatment services. But to look at the matter realistically, surely it would be courting disillusionment and disappointment simply to increase the financial support of the established forms of Public Health activity. It is not enough to have more and more of the old remedies for the old ailments of the Public Health. Research in a number of new fields is required—into the causation of the so-called chronic diseases, into the manifold conditions which trouble the mental health of thousands of our fellow citizens, reduce their enjoyment of life and make participation in its tasks and responsibilities a struggle instead of an adventure; into the prevention of the trivial illnesses of everyday existence; into the fostering of the physical forces of men and women so that old age comes upon them more gradually, and with less sense of restrictive incapacity. These are only a few of the comparatively uncharted fields, exploration of which will surely reduce the burden of the curative services."

Some of us might say that the new developments which he outlines are already well on the way to becoming established services in the more progressive health departments and especially in those which have formed links with the hospitals and general practitioners in their areas. But preventive medicine must to some extent remain Cinderella until public opinion sees that she (and those who serve her) are more adequately provided with the wherewithal. At present we feel that preventive medicine is not only Cinderella, but Cinderella on ice. However, Cinderella will in the end get her Prince! Incidentally, if preventive medicine is Cinderella, who are the Ugly Sisters and Baron Hardup?

The District M.O.H.

Dr. H. K. Cowan's address (printed on other pages of this issue) to the refresher course organised by the County District M.O.H. Group of the Society last autumn, is a most constructive statement by a County M.O.H. on the interests of his public health colleagues serving "minor authorities." His passages on the need for the District M.O.H. to resist encroachments on his sphere, and to take an active part in the functions sometimes left to the Sanitary Inspector, are especially noteworthy and timely.

Members of the Society will have noted with great pleasure the bestowal in the New Year Honours List of the C.B.E. on Dr. W. G. Clark, formerly M.O.H. of Edinburgh and President in 1951-52. Other members who receive honours are Prof. Thomas Ferguson, of Glasgow (C.B.E.), and Dr. D. H. Geffen, M.O.H., St. Pancras and Hampstead (O.B.E.). Mr. Arnold Marsh, of the National Smoke Abatement Society, and Mr. J. H. Warren, of NALGO, also receive well-earned O.B.E.s.

Dr. Doris Craigmile, A.M.O.H., Middlesex (Area 7), and honorary secretary, Maternity and Child Welfare Group of the Society, has been appointed assistant administrative medical officer of health for the City of Birmingham.

---

* Report of the Ministry of Health for the year ended December 31st, 1952. Part II. On the State of the Public Health, being the report of the Chief Medical Officer for the year 1952. Cmd. 9009. H.M.S.O. Price 6s. 6d.

FLUORIDATION OF WATER SUPPLIES*

By JEAN R. FORREST, L.D.S., R.F.P.S. (GLAS.),
Dental Officer, Ministry of Health, a member of the United Kingdom Mission to the U.S.A.

It has now been widely demonstrated that the presence of fluorides in drinking water is associated with a lower incidence of dental caries.

Research in the earlier part of this century was concerned only with the toxic effects of excessive amounts of fluorine and the presence of trace amounts was not considered important. In 1901 mottling and brown staining of the teeth was noted and described, but its cause was not fully investigated until 1916, when Black and McKay carried out a survey in areas in the United States where endemic mottling occurred, and suggested that the condition was probably due to some factor in the drinking water. This factor was reported by Churchill, Smith and others in 1931 to be an abnormally high level of fluoride. Although fluoride is a natural constituent of practically all waters it occurs for the most part merely as a trace, and few waters contain more than 1 p.p.m. The highest level recorded in this country is 6 p.p.m., but in the United States, India, South Africa and Kenya waters containing 10 p.p.m. or more have been reported. Indeed, a paper recently published gives some startling data for waters in Kenya. Water from boreholes which have been brought into use within the past six to seven years has been found to have as much as 30 to 40 p.p.m. of fluoride, while lake water in one area has nearly 3,000 p.p.m. Needless to say, this water cannot be used for domestic purposes.

Mottled enamel, or dental fluorosis, has been studied in many countries. By far the most extensive work, however, has been done by Trendley Dean and his fellow-workers in the United States of America, who classified mottling in six grades according to its severity: "questionable," "very mild," "mild," "moderate," "moderately severe" and "severe" and demonstrated that the degree of mottling was directly related to the fluoride content of the water. Very mild mottling was found to occur with concentrations of 1·0 to 1·5 p.p.m. of fluoride, mild mottling with 1·5 to 2·0 p.p.m. and with concentrations of 5 p.p.m. or more severe mottling occurred, all the teeth being affected at this level. It might be emphasised that in the lowest grades, "questionable" or "very mild," there is no unsightly disfigurement of the teeth. Careful examination is required to detect the few white flecks or opaque spots which occur on some of the teeth, and it is difficult to distinguish them from similar dystrophies which have no connection with fluoride. Even in "mild" mottling, the white spots which occur on more than 50% of any tooth surface usually pass unnoticed, and brown staining and pitting of the tooth surface associated with the term "mottled enamel" occur only with concentrations of 3·0 p.p.m. or more of fluoride.

In these areas of endemic fluorosis it was reported by Black and McKay that the teeth appeared to be less liable to caries despite their defective structure. In this country Ainsworth reported a lower caries experience in both the deciduous and permanent teeth of children in Maldon, Essex, where the water contained about 5 p.p.m. of fluoride, although only the permanent teeth were mottled.

Interest was considerably aroused when, later, Dean demonstrated that there was a markedly consistent inverse relationship between the fluoride content of the drinking water and the incidence of caries below a level which produced any signs of mottling. Caries became consistently less with increasing amounts of fluorides, but the optimum concentration for caries reduction, in temperate climates, appeared to be about 1·0 to 1·5 p.p.m. as with higher levels unsightly mottling of enamel occurred with little further reduction in caries.

Dean found that children aged 12 to 14 years who had been born and reared in an area with 1 p.p.m. of fluoride in the drinking water, had 60% less caries than those in a comparable area where there was no fluoride in the water, and that 20 to 30% of their teeth were completely free from caries. Similarly, in this country, Weaver found that children aged 12 years in South Shields, where the fluoride content of the water was 1·4 p.p.m., had 45% less caries than those in North Shields, where the water contained only 0·025 p.p.m. of fluoride, and that 27% of the South Shields children were free from caries. In a later survey Weaver found that caries experience in West Hartlepool, where the water had 2·5 p.p.m., was even less than in South Shields, but this was accompanied by an undesirable amount of mottling. Ocherse carried out an extensive survey in South Africa examining children and water supplies in 200 districts and cities. He also found a condition between the number of children immune to dental caries and the fluoride content of the drinking water.

From all these studies it will be seen that there is a narrow margin between beneficial amounts of fluoride and those causing mottling of the teeth. Dean's findings were analysed by Hodge, and the point at which there is the minimum of caries with the minimum risk of mottling, between 1·0 and 1·5 p.p.m. of fluoride was clearly demonstrated.

Fluoridation Studies in the U.S.A.

As a logical sequence to the epidemiological evidence it was decided in the United States and Canada to see whether a similar result could be obtained by adding fluorides to waters in which there was a deficiency to raise the concentration to the level of 1 p.p.m. This procedure, termed "fluoridation," was first introduced by the United States Public Health Service in 1945, when a controlled study was set up in Grand Rapids. Within two years several other studies followed and, later, fluoridation of public water supplies was started in many areas as a public health procedure. By 1951 it had become almost a generally accepted practice. Even after only five or six years the results obtained in the fluoridation studies were so impressive that a Government mission was sent to America to study all aspects of fluoridation and assess its efficacy, harmlessness and feasibility. To do this we visited six of the study centres, several natural fluoride areas, the National Institute of Research at Bethesda and the research departments of a number of medical and dental schools.

We were especially anxious to obtain information on American methods of examination and standards of assessment of dental caries, so as to be able to compare them with known standards in this country, and it was for this reason that my visit was extended for an additional month. I was given facilities at each of the study areas either to examine children along with the American dental officers and compare our methods and findings or, where this could not be arranged, to compare my findings with the official record cards which were willingly made available.

The studies visited were Grand Rapids, Michigan; Newburgh, New York; Sheboygan, Wisconsin; Brantford, Ontario; Evanston, Illinois; Marshall, Texas. Where possible a nearby town comparable in size and economic status, and with a similar but untreated water supply, is used as control. Dental examinations were carried out in both experimental and control areas before fluoridation started, and further examinations have been made annually. The dental condition of the children in the fluoridation town is compared at each age either with that of the control town or, more usually, with the base line data. In two of the studies an additional comparison is made with an area where fluoride occurs naturally at about the same level. As a rule the studies are limited to schoolchildren between 5 and 16 years, although in Newburgh some pre-school children are included. They are planned to extend over 15 years so that the full effect on the complete permanent dentition can be assessed.

The studies vary to some extent not only in size of population but also in scope, in the criteria adopted for caries assessment and in the method of presenting the dental

* Address to the Dental Officers Group, Society of M.O.H., October 24th, 1953.

findings. Grand Rapids is the largest ; more than 24,000 children were examined before fluoridation was started, and 6,000 to 7,000 have been examined in each subsequent year. In Newburgh and Evanston the study includes about 6,000 children, but in Marshall only 2,000 children were examined before fluoridation and even fewer in later years. Some of the studies are concerned mainly with the effect of fluoride on dental conditions, and clinical dental examinations only are carried out. In others chemical and bacteriological tests are made each year from samples of saliva and the *Lactobacillus acidophilus* count is made. In the Evanston study, which is the most elaborate, *x*-ray as well as clinical examinations are made, and blood and urine tests are included, while in Newburgh there is a most valuable paediatric research programme, which includes *x*-ray examination of the developing long bones from birth, blood and urine analysis and complete physical examination.

The dental examinations are carried out each year, by the same examiners if possible, and from my observations I have no hesitation in saying that a high standard is generally maintained. The criteria generally used for the assessment of caries are those prepared and devised by the U.S. Public Health Service. No abnormality is regarded as caries unless it is " demonstrable beyond the possibility of doubt." A cavity must be seen as well as be detected by a probe. In Evanston, however, early enamel caries which could only be detected by *x*-rays is included in the caries count, even though it may be the merest radiolucency ; this makes comparison of Evanston with the other studies difficult.

In presenting the findings the caries experience of the deciduous and permanent teeth are usually given separately. This is expressed as the average number of d.e.f. (*i.e.*, decayed, extracted or indicated for extraction, and filled) deciduous teeth, and D.M.F. (decayed, missing and filled) permanent teeth per child at each age. In Sheboygan and Evanston, however, the findings are given for selected age groups, *e.g.*, six to eight years and 12 to 14 years. In Brantford and Marshall the findings in the deciduous and permanent dentition are combined and given for each age.

In spite of the fact that no two studies are exactly alike, the similarity of their results is striking. In every case dental caries has been steadily reduced and it is important to note that the order of reduction was consistently the same in all the early studies. It was most marked in the five- to six-year age groups, but even among the older children a lower caries incidence was observed, from which it might be assumed that fluoride exerts some influence even after tooth development is completed. Before any definite conclusion can be reached, however, further research is necessary.

Most of the studies have been in progress sufficiently long for the results to be assessed. In these, children aged six years had 50% less caries in the deciduous teeth and 70% less in the permanent teeth in 1952 than they had before fluoridation was started. At this age, however, comparatively few of the permanent teeth have erupted, and none have been exposed to caries attack for any length of time, so that although the reduction in the permanent dentition is an impressive figure it is in the deciduous teeth that the effects of fluoridation can as yet be most truly assessed. The deciduous teeth have all been developed and mineralised during the period of fluoridation, and in addition they have been exposed to caries attack for some years.

Among six-year-old children in Grand Rapids the average number of d.e.f. teeth per child was 6·4 in 1945, and in 1952 it had fallen to 3·7, whereas in the control town of Muskegon it remained as high as 6·0. In both the deciduous and permanent teeth caries experience at this age in 1952 was practically the same as in Aurora, where fluoride occurs naturally at a concentration of 1·2 p.p.m. In Newburgh, also, caries incidence has been gradually reduced. In 1945 children aged six years had an average of 5·7 decayed and filled deciduous teeth, and in 1952 they had 2·7. Similarly, in Brantford, Sheboygan and Marshall caries was reported to be 50% less in the deciduous teeth after six years of fluoridation. It was only in Evanston that a reduction of the same order had not been observed in the deciduous teeth, but this study was started later than the others, so that the deciduous teeth of children who were six years of age in 1952 had all been formed and mineralised before fluoridation was introduced. The findings for the permanent dentition, however, closely resembled those of the other studies.

We examined the teeth of a number in all the study areas and formed the opinion that the six-year-old children had healthy mouths and teeth, and that a good proportion were caries free. In contrast to this I found in Grand Rapids that most of the children in the older age groups had a very high caries incidence, and this appeared to have been general at all ages prior to fluoridation. Many of these older children had fillings in all their posterior teeth, but untreated caries could frequently be seen, treatment appearing to depend on social status and financial means. In the United States there is no School Dental Service as we understand it, and except for a few isolated projects set up for some special research purpose, State Dental Services provide only dental health education. Although there is one dentist to every 1,800 of the population in the United States—that is more than twice as many as in this country—I was informed that not more than one-fifth of the dental needs of the children in the United States as a whole is being met.

In all the studies the teeth are carefully examined for mottled enamel. Only questionable or very mild grades have been reported and in not more than 10% of the children. We made a point of seeing the conditions for ourselves, and we were satisfied that it was so slight that it could not be considered a disfigurement. In fact, it had to be pointed out to the non-dental members of the mission. The white flecks were similar in frequency and distribution to those observed amongst children in Aurora, and it might be mentioned that some similar flecks were observed among children in control areas who had had no fluoride at all.

In all the study areas the level of fluoride in the water is about 1·0 p.p.m., so that under comparable temperate climatic conditions the intake of fluoride from the water would be about the same in each case. It has been assessed at 1·0 to 1·5 mg. per day on the assumption that 1 to 1½ litres of water are consumed. Marshall, Texas, however, has a much hotter climate, part of Texas is almost equitorial, and it is more humid than any of the other study areas. The consumption of water might, therefore, be expected to be greater with more risk of mottling of the teeth. For this reason Dr. Longwell and I visited Marshall, but although more than 80 six- to seven-year-old children were examined, in many of whose mouths most of the permanent incisors and all the first permanent molars had already erupted, there was no more mottling than in the northern studies.

Whilst in Texas we visited Bartlett, where the water has 7 to 8 p.p.m. of fluoride, and severe mottling of the teeth is a common occurrence. Practically every child examined had unsightly stained teeth, the few exceptions proving to have been brought up on bottled water.

The actual mode of action by which fluoride in water controls dental caries is not yet fully known. It has been suggested that it affects bacterial growth as an enzyme inhibitor, but it is unlikely that such dilute solutions as fluoridated water would have any such effect. Salivary Lactobacillus counts have been found to be only slightly lower with 1 p.p.m. of fluoride. Fluorine compounds are natural constituents of enamel and dentine, and it has been shown that the amount is increased when fluorides are ingested in the drinking water. It has been suggested, therefore, that the increased fluoride content of the enamel might have a local anti-bacterial or anti-enzyme effect actually at the tooth surface. Probably the most likely theory is that when fluoride is ingested during the period of tooth formation it reacts with the hydroxyapatite to form a highly insoluble fluorapatite making the tooth more resistant to decay. It has been found in the United States that the topical application of solutions of fluorides is not so effective as fluoridation of water nor are its effects so lasting, and this may be explained by a recent work of McClure in which he found that topical application of a 2% solution of sodium

fluoride leads to the formation not of a fluorapatite but of calcium fluoride on the surface of the tooth.

When the results of the various studies are examined there is no doubt that an important reduction in caries has occurred among children who have been exposed to the influence of fluoridation for the whole of their lives, and this has not been accompanied by any undesirable mottling of the teeth. The fact that these conclusions have been derived from several completely independent studies in widely separated areas makes them convincing.

The possibility that the results may have been influenced by biased examinations can definitely be ruled out. Other possible variables in the study and control areas, however, have not always been considered, although it is unlikely that these have affected the comparison. For example, the total fluoride intake has not been estimated. Since the fluoride concentration of the water is the same in each study, the average amount of fluoride ingested each day from water has been calculated, but this does not represent the total intake as fluoride may also be derived from food. It is only in Evanston that an attempt is being made to estimate the fluoride intake from all sources. If dietetic habits in the study and control areas differed the total intake would be affected. From our observations, however, the diet appeared to be similar in all the areas studied, and as the average intake of fluoride from food is estimated by McClure to be only about 0·2 to 0·5 mg. a day any variations would be too small to affect the comparison to any appreciable extent. On the whole the types of population studied are similar. Most of them live in prosperous urban areas in the northern states, and are predominantly white. In Grand Rapids and Newburgh coloured children are included in the study but they are not numerous, and as they mix freely with the white children, attend mixed schools and eat similar foods, there is now no difference in their caries experience and that of the white children. In Evanston coloured children are excluded from the study, as their caries experience was found to be lower than that of the white children. Social distinctions are more apparent in Evanston than in the other northern study areas, and although there is no strict colour bar, these children attend separate schools. On the other hand, in Marshall, Texas, there is a noticeable segregation of the two races. The coloured people, many of them cotton pickers, seem altogether different from those in the north. Their houses are poor shacks on the outskirts of the town, and it is most unlikely that they eat the same foods as the white children, or that their caries experience is similar. It is understandable, therefore, that they were not included in the study. In none of the groups studied were there any signs of malnutrition, and the level of sugar consumption was about the same in all areas. This appeared to be comparatively high, especially as carbonated drinks are widely used in the United States.

So far, the full results of fluoridation are apparent only among the younger age groups, but from these it is reasonable to predict the result which can eventually be expected. There is no essential difference between fluorides which occur naturally in water and those which are added to water. Their action on the teeth should be similar, and this is borne out by the similarity shown in the dental condition of six-year-old children in the natural fluoride areas and in the fluoridated areas where the levels are similar. It can be anticipated that this will extend eventually to the higher age groups so that caries experience will then be of the same order in all areas with a similar level of fluoride, whether it occurs naturally or is added to the water. Dean has shown that caries is 60% less among 12- to 14-year-old children drinking water containing about 1·2 p.p.m., and Weaver found that it was 45% less at 12 years of age with 1·4 p.p.m. fluoride. Recent surveys in England and in the United States have indicated that the continued use of water containing an appreciable amount of fluoride gave a lower caries incidence up to middle life. In this country it was found that women aged 26 to 30 years born and reared in high fluoride areas had 35% less caries than those in non-fluoride areas, but the difference became less with increasing age. In the United States, on the other hand, the difference was 61% at 30 to 34 years and had fallen only to 52% at 40 to 44 years. The more striking difference observed on the American study may, however, have been partly due to a higher fluoride concentration of water as well as other factors; for example, the different social status of the individuals studied. A different standard of dental care was probably an important factor, too, for analysis of the findings in the two countries shows that the proportion of missing teeth was very much higher in the English study, while in the American study most of the defective teeth had been filled. This suggests that fluoride is most effective when accompanied by a high standard of conservative dentistry.

What Fluoridation Can and Cannot Do

There can be little doubt that fluoridation will eventually benefit not only children but also adults. It must not be thought, however, that it will cure caries, and we do not yet know if it will retard the progress of any which already exists. All people will not benefit to the same extent for some who are particularly susceptible will still develop severe caries as they do in natural fluoride areas, and those whose teeth are already formed before fluoridation is introduced will not be appreciably affected. Fluoridation will not reduce the cost of the dental services, but by lowering the incidence of caries it will enable dentists to cater more fully for the needs of the people, provide more conservative treatment and maintain a better standard of dental health.

Antagonists to fluoridation are of the opinion that it will be harmful to general health and will cause bone deformities, cancer, nephritis and even " mental retardation." The toxic effects of fluoride are well known, but it must be remembered that they depend not only on the quantity of fluoride ingested but also on its elimination from the body, and McClure has estimated that with an intake of up to 5 mg. daily, 90% of the fluoride absorbed is eliminated in the urine. There is no evidence that fluoridated water differs in any essential way from water in which fluoride occurs naturally ; at such a low concentration as 1 p.p.m. fluorides are completely ionised, and it is the fluoride ion which is operative. Evidence of good or bad effects can be derived not only from fluoridation studies but also from the experience of people who have always consumed water in which fluorides occur naturally, and more than 3,000,000 people in the United States and many in this country live in areas where the water contains far more than 1 p.p.m. of fluoride without any known injury to health.

Severe bone lesions were reported among Cryolite workers in Denmark who were continuously exposed to dust containing high concentrations of fluoride, but it should be realised that the average fluorine intake in most of these cases was probably as much as 20 to 30 mg. a day. Among aluminium workers in Fort William, especially those who worked in the furnace rooms and so were continuously exposed to heavy concentrations of fluoride, some similar, though less severe, effects were observed. Bone lesions have been found to occur with concentrations of 6 p.p.m. of fluoride in the drinking water in India, yet many people in other countries consume water with a similar high concentration and no bone lesions have been observed. The standard of nutrition in this particular area in India is poor, and it has been shown elsewhere that a poor standard of nutrition is a contributory factor in chronic fluorosis. In Bartlett, Texas, where the fluoride content of the water is 7 to 8 p.p.m., a survey of adults was made and it was reported that although some slightly increased bone density could be observed in 11% of those examined by *x*-ray there was no clinical evidence of disability. Neither is there any evidence that the continual consumption of water with such a low concentration of fluoride as 1 p.p.m. has any harmful effect on the general health. In Newburgh, *x*-ray examinations have been carried out each year from birth on 200 children, and the radiographs have been studied by an independent expert. Since an excess of fluoride is known to affect bone development it is in the epiphyses of the growing long bones that

any effect would be apparent, yet after six or seven years of fluoridation no ill-effects whatever have been observed.

It has been said, too, that fluoridation would increase the incidence of cancer, a statement which is based on experiments at the University of Texas, where mice fed on water containing 1 p.p.m. of fluoride were found to die earlier than those which had had no fluoride. This work was disclaimed by the Dean of the Medical School of the University, as it had several serious flaws. For example, the mice were a strain bred especially for their tendency to develop mammary cancer, and as their food was found on investigation to contain as much as 60 p.p.m. of fluoride the addition of 1 p.p.m. from water could make very little difference. So far as human cancer is concerned there is no evidence that fluoride either naturally present or added to water affects its incidence at all.

It has been suggested that fluoridation may impair kidney function, and hasten the progress of kidney disease, but there is no evidence of any such effects from the consumption of water with such a low level of fluoride. Laboratory experiments on rats showed that a diet containing sufficient fluoride to produce a state of chronic fluorosis led to kidney degeneration and finally to interstitial fibrosis, but it should be noted that the total fluoride intake was 4 to 15 mg. a day. There is no evidence that low levels of water-borne fluorides have ever caused any kidney lesion in the human subject, and from data obtained from army entrants in the U.S. McClure reported that even with an exposure to fluoride waters containing 2·0 to 5·2 p.p.m. fluoride, there was no indication of renal injury. A misleading report issued in the U.S., and recently quoted by opponents of fluoridation in this country, stated that there had been an abnormal increase in deaths from heart and kidney diseases in Grand Rapids since fluoridation was introduced. This was incorrect, and was quickly refuted by the U.S. Public Health Service and the State authorities. The figures given in the first instance were those for the City of Grand Rapids, while the others were those for the whole of Kent County.

Although there are many areas in the U.S. where fluoride occurs naturally in the water at a level of 1 p.p.m. or more, it is difficult to analyse mortality statistics on the basis of previous exposure to fluoride ; for instance, death certificates do not necessarily give either the birth-place of an individual or the place in which he has normally lived. There is no indication, however, from vital statistics of any special hazard in fluoridated areas. In the report of the *ad hoc* Committee on Fluorides in Water, set up by the National Research Council, it is stated " there is no evidence that the continuous ingestion of drinking water with a mean concentration of fluorides below the level causing mottled enamel, would have adverse physiological effects."

The risk of cumulative storage of fluoride in bone and other tissues from concentrations as low as 1·0 p.p.m. is remote. McClure reported that with a daily fluoride intake of up to 4 or 5 mg. excretion of the fluoride by urine and sweat is practically complete, although other experiments suggest that storage may begin at a slightly lower level.

In a report presented to the Cincinnati Board of Health, Dr. F. F. Heyroth, of the Department of Preventive Medicine and Industrial Health of the University of Cincinnati, states :—

" In general, consideration of the available evidence indicates that the risk to the public health from fluoridation of the water is negligible. Nevertheless, it is desirable to consider by what means any harmful effects of fluoridation might be detected in the population as a whole before the manifestations of chronic fluorosis had progressed to a disabling degree. Dental examinations among school children would certainly reveal the occurrence of mottled enamel long before any skeletal effects could be expected to become manifest. That persons who had migrated into the community after their enamel had calcified might develop fluorosis without exhibiting mottling is of little importance, because if the water were capable of so affecting them it would certainly cause mottling in the children. Determinations of the urinary fluoride concentrations at intervals of a few years might serve as an additional safeguard."

There have been no significant complaints of any adverse effects on industry since the introduction of fluoridation—even in brewing, although fluoride is an enzyme inhibitor. At a level of 1 p.p.m. of fluoride the taste of water is unchanged and although it was reported from an ice factory at Charlotte, North Carolina, that after fluorides were added to the water ice cracked more readily, this difficulty was not experienced in other fluoridated areas.

Technique and Cost of Fluoridation

The actual mechanical addition of fluorides to the water would present no difficulty. Precision apparatus is required but the equipment used in the U.S. is similar to that commonly used for established treatment procedures in this country.

Four fluorine compounds have been used in the United States : sodium fluoride, sodium silico-fluoride, hydrofluosilicic acid and hydrofluoric acid. This last has been used in only one area, and is not likely to be recommended for other studies. Commercial hydro-fluosilicic acid, which is used without dilution, is popular in some areas, but sodium fluoride and sodium silico-fluoride are the compounds which are in general use. The former being more soluble is preferred for small installations, and the latter for larger undertakings. The silico-fluoride has the advantage of costing only about one-third as much as sodium fluoride.

Provided that adequate precautions are taken, the handling of these chemicals is not hazardous. Charging the hoppers is a dusty operation and the use of respirators, dust collectors, and rubber gloves is recommended for waterworks operators. When acid compounds are used additional precautions are necessary. As a means of further safeguarding the health of the operators it is recommended that samples of urine be tested periodically to make sure that the safe level of fluoride intake is not exceeded.

Most of the large undertakings use dry feeders which deliver a definite amount of dry chemical in a unit time to a solution tank, and from there the solution is fed into the main water supply. Gravimetric feeders appear to be the most accurate, and as they give instant warning if there is any variation in the rate of feed, they are considered the most satisfactory type of apparatus.

In all the studies the fluoride concentration of the water is determined daily by waterworks personnel, and these figures, together with the record of gallonage of water pumped, and the amount of fluoride used, are submitted each week to the State health authorities. In addition, weekly samples of water are sent to the State laboratories and checked independently. Where it is suspected that the routine test is unreliable the State laboratories use the distillation method of estimation.

Fluoridation is not expensive. After the initial outlay on the feeding equipment—which varies between 400 and 5,000 dollars according to the size and type of feeder—the cost is very largely that of the fluorine compound used. Additional personnel is not required and the existing staff at waterworks can maintain the fluoridation equipment. The total cost varies, of course, with the size of population served. In Detroit, with a population of about 2,500,000, the cost per head was estimated at 3 cents per annum, while in smaller undertakings it varies between 5 and 15 cents. This is probably the actual cost of the fluorine compound used.

In two areas in the United States investigations are in progress on the removal of excess fluorides from the water supply. One of these is at Bartlett, Texas, where the water has a fluoride level of between 7 and 8 p.p.m., and the other is in South Dakota. The Bartlett apparatus, which was designed by the Chief Sanitary Inspector to the United States Public Health Service, was actually put into operation during our visit to Bartlett. With this apparatus the water is filtered through activated alumina, and the fluoride level of the water is reduced to about 1 p.p.m.

Fluoridation is steadily becoming a popular public health procedure in the U.S. and has the support of the American Dental and Medical Associations, the National Research Council, the U.S. Public Health Service, the American Public Health Association, the American Association of State

and Territorial Health Officers, the American Association of Public Health Dentists and the American Waterworks Association.

Fluoridation projects are introduced as the recommendation of local medical and dental organisations, and are under the direction of local health authorities who are advised on policy and planning by the U.S. Public Health Service and State health authorities.

A proposal to introduce fluoridation has at times led to considerable controversy. One of the most widely publicised discussions took place while we were in Washington D.C.—the hearing before the Select Committee set up by Congress to Investigate the Use of Chemicals in Drugs and Foods, otherwise known as "The Delaney Committee." A great deal more importance has been attributed by some people in this country to statements made and evidence given before the Committee by opponents of fluoridation than to the recommendations of the National Research Council, a scientific body also set up by Congress, but in the United States the Research Council carries more weight. This is borne out by the fact that very shortly after the Delaney Report was published Congress approved the fluoridation of the water supply of Washington D.C. itself.

At the time of our visit fluorides were being added to water supplies in 172 communities in the U.S. and one in Canada, totalling over 4,000,000 people and a further 407 communities had approved its introduction. According to the latest figures in a census of fluoridation in the United States and Canada published in the journal of the American Waterworks Association in August of this year, fluoridation has now been started in 777 communities served by 409 waterworks, and with a population of 14,350,000. In addition, 357 communities with a total population of 15,800,000 have approved fluoridation, but have not yet actually started it.

For one reason or another three fluoridation schemes, all in small towns, were discontinued in 1952. One in Wisconsin as a result of a campaign by local Christian Scientists and chiropractors, one in Florida because of an unfavourable vote by its citizens, and the third in Washington State pending the purchase and installation of new equipment.

When we submitted our report at the conclusion of our visit to America we stated that in our opinion fluoridation had proved a useful means of reducing the incidence of dental caries in North America, and that it was reasonable to assume that it would also be useful in this country. We considered that no other method of administering fluoride was as satisfactory as the fluoridation of water. We, therefore, recommended that its adoption should be considered, but we suggested that it should first be introduced in some selected areas.

This recommendation has led to some comment, and it might be made clear that the recommendation was not made because of any doubts on our part as to the danger to the public health, but rather to obtain the fullest information on its application under conditions in this country.

The incidence of caries is influenced by several factors and these are not all necessarily the same in every part, or in any part, of this country as they are in the United States.

Again, dietary habits differ, and fluoride occurs in nearly all foods. Fish, in particular, may contain as much as 7 p.p.m. and much more if it is canned. In addition, we are a nation of tea drinkers, and the habit is not confined to adults. Even one cup of tea may contain 1 p.p.m. of fluoride, and where tea is widely consumed the amount infected might affect the optimum amount recommended for fluoridation.

It has still to be decided whether or not our Government will accept and implement our recommendations, but if they should advise that fluoridation be adopted in this country, the level of fluoride which would give the maximum reduction in caries without any risk of mottling would have to be determined. It is unlikely that it would be very different to the 1·0 to 1·5 p.p.m. advised in the U.S. but it might be slightly less. Some months ago I examined 425 boys and girls between 12 and 16 years of age at Slough, where the average fluoride content of the water is only 0·9 p.p.m. and I found very mild mottling in 11 and mild mottling in three of the children.

Before any level of fluoride were agreed, therefore, the total fluoride intake from all sources would have to be estimated in all parts of the country. This could be done in two ways, (1) by a survey of the average diet and estimation of the fluoride content of all foods consumed, or (2) by a survey of fluoride excretion in the urine of representative groups of children and adults throughout the country. This method would probably be the more accurate and feasible, but it will be realised that a good deal of preliminary work is involved.

A weakness of the American schemes that we would not wish to repeat in this country was that most of the evidence of harmlessness was negative and was obtained from experience in natural fluoride areas. In only one area was direct evidence obtained on the effect of fluoridation on the general health. Although we considered that there was no likelihood of any adverse effects from use of waters with low levels of fluoride we recommended that this aspect should be carefully watched and that medical research should continue not only among children, but also among older people. It will be appreciated that by the time any studies which may be set up in this country have been in progress for a few years the American studies will be complete, and fuller information will be available.

THE PLACE OF THE COUNTY DISTRICT MEDICAL OFFICER OF HEALTH*

By H. Kenneth Cowan, M.D., D.P.H.

County Medical Officer of Health, Essex

A study of the place of the County District Medical Officer of Health involves consideration of many and varied factors which have a bearing upon his job, some related to the health of the community which he serves, some to the conditions in which he works, some to his relationship with colleagues inside and outside his immediate sphere of activities, and some to the peculiar system of local government of this country. It is desirable in the first instance to outline briefly his present duties and responsibilities.

Duties and Responsibilities

The memorandum of the Ministry of Health on the duties of Medical Officers of Health in England and Wales states that the chief function of the Medical Officer of Health is to safeguard the health of the area for which he acts by such means as are at his disposal, and to advise his Authority how knowledge of public health and preventive medicine can be made available and utilised for the benefit of the community. It is illuminating that this guidance was published as long ago as 1925 and presumably is still the basis of the generality of duty of the Medical Officer of Health.

The District Medical Officer of Health should systematically carry out periodical inspections of each part of his area, as well as inspections of special places as a result of complaints or adverse reports, as occasion may arise, and should be familiar with the statistical and other relative information bearing on health conditions in his area, and with any local acts and by-laws in so far as they relate to health and sanitary matters.

A Medical Officer of Health should be prepared to advise his Authority on questions relating to the housing conditions in his area with particular regard to slum clearance, overcrowding and conditions prejudicial to general human health. He should also advise the Local Authority on housing priorities on medical grounds, particularly in regard to tuberculous families and the like. (This work also includes general advice in connection with the preparation of housing and town planning schemes in so far as water supplies and

* Address to the County District Medical Officers of Health Refresher Course, London, September, 1953.

sewage disposal are concerned.) The Medical Officer of Health may also be appointed as the designated officer under the Housing Consolidated Amendment Regulations, 1932 (Inspection of District), and in any case is responsible for the direction and supervision of such work.

Infectious Diseases.—It is the duty of a Medical Officer of Health to investigate and advise his Authority on the adequacy of the arrangements in the district for the isolation, treatment and control of infectious diseases, and to submit the necessary weekly returns of notifiable infectious diseases. In the event of an outbreak of any infectious or epidemic disease he should personally investigate the causes and circumstances of the outbreak and take such measures for the prevention of the spread of the disease as he is legally authorised to do. In this category is included any case of suspected infectious disease. He should undertake or arrange for the surveillance of contacts, and advise the persons competent to act on the measures to prevent the extension of the disease. He should ensure that adequate records are kept of all cases of infectious disease notified, including the keeping of a register for tuberculosis (this latter is optional). He should maintain at all times liaison with the appropriate authorities with regard to the notification of contacts and take any other measures necessary in this connection to prevent the spread of the disease. He is also responsible for similar action and for the necessary investigations in the case of outbreaks of infections associated with food poisoning.

His responsibility extends to the hygienic condition of school premises, particularly canteens and kitchens, and in consultation with the School Medical Officer and in co-operation with him, the Medical Officer of Health is responsible for the exclusion of individual children from school or the closure of a school on account of epidemic conditions with a view to preventing the spread of disease or any danger to health likely to arise from the condition of the school.

Food and Milk.—The Medical Officer of Health should inspect from time to time and exercise supervision over slaughter-houses, cold stores, dairies, cowsheds, milk shops and other premises where food is prepared and/or sold to the public, including shops and catering establishments. The statutory requirements in connection with the preparation and sale of ice cream require his constant attention. He is concerned with the effective application of the Acts and Regulations in respect of food which is diseased, unsound, unwholesome, or unfit for human consumption.

Offensive Trades and Nuisances.—Medical Officers of Health in Urban Districts should be prepared to enquire into any offensive process or trade carried on within the district and to advise upon the appropriate means for the prevention of any nuisance or injury to health arising therefrom. In all districts he should be prepared, where desirable, to take such steps as he is legally authorised to take for the purpose of securing the early abatement of any nuisance injurious to health.

Health Education.—The Medical Officer of Health should also be responsible for the dissemination of such advice and information as his Authority consider advisable in relation to health education, including precautions against home accidents. Much of this work can still be considered as proper to the District Council as to the County Council.

Old People.—The Medical Officer of Health is responsible, after thorough enquiry and consideration, for certifying in writing to the appropriate Authority that it is necessary to remove any person suffering from grave chronic disease or who is aged, infirm or physically incapacitated and who is living in insanitary conditions, in the interests of this person or for preventing injury to the health of, or serious nuisance to, other persons (National Assistance Act, 1948, Section 47).

Meetings and Records.—The Medical Officer of Health should endeavour to attend all meetings of the Council and of Committees of the Council dealing with matters of health, and should submit whenever necessary to them reports in writing of the advice he gives in regard to the improvement and protection of public health in the area and of the action taken by the Authority. He should ensure that due record is kept of all essential matters arising in the course of his administrative duties.

Reports.—The Medical Officer of Health is required to make an annual report and, in addition, to make a report on any special subject which may be called for by his Council or by the Minister of Health.

Co-operation.—The Medical Officer of Health is required to maintain close touch with all neighbouring Medical Officers of Health and with the County Medical Officer of Health, and to collaborate with these officers in necessary enquiries and action in relation to infectious disease, and should be acquainted with the nature and extent of the facilities and accommodation available for the use of the inhabitants of his area in relation to all matters pertaining to health and for liaison with all appropriate authorities in connection with these matters.

Units of Administration

The patchwork form of local government in this country produces anomalies in sizes of units, duties and responsibilities and types of authority, and in the health services this is emphasised by the haphazard division of powers and duties between different local government bodies. In the public health field some attempt has been made in Counties to rationalise sizes of units in relation to District Councils by the aggregation of separate Authorities into joint areas for appointment of Medical Officers of Health. Section 111 of the Local Government Act of 1933 required County Councils to prepare schemes for their areas which would ensure, by a combination of districts or otherwise, the appointment of whole-time Medical Officers of Health. Over the years progress was made in most parts of the country in the combination of districts in relation to public health functions, and the major portion of the country is now served by District Medical Officers of Health acting in a whole-time capacity either as Medical Officer of Health of a large Sanitary District, as Medical Officer of Health of a combination of Sanitary Districts, or as Medical Officer of Health of either of the former and also as a Medical Officer to the County Council.

Unfortunately the development of areas for the appointment of whole-time Medical Officers of Health did not proceed on any well-defined lines. Furthermore, the position in 1948 was made more complicated as a result of the National Health Service Act, and to-day there is a complex pattern of units with no settled basis as to population, area or type of authority.

No considered opinion has yet been formulated as to the population of an area which would be considered sufficient to occupy a single-handed District Medical Officer of Health for the whole of his time, and it would be difficult to be precise, bearing in mind the variations in the size and type of area. Suggestions have been made that a population of 100,000 in an urban area would justify a whole-time appointment, but in considering aggregations of areas with a number of Rural District Councils involved, the amount of travelling time, of time spent at meetings of the various Local Authorities, and the absence of a conveniently situated administrative centre, complicate the issue to the extent of making it almost impossible to be precise.

Nevertheless, it is of importance that some assessment of time to be devoted to duties as District Medical Officer of Health should be made owing to the changes which have been brought about by the National Health Service Act and the establishment of mixed appointments. This aspect of the matter is dealt with later in connection with relationships with the County Council and the effects of Industrial Court Awards. Fully realising all the complications involved in this issue I would not be prepared to make a firm suggestion as to the optimum population to be served in different types of area. I would, however, suggest that the matter is of such importance that the County District Group of the Society of Medical Officers of Health should study the problem and try to reach a formula which could be used as a guide when appointments are being made and assessments of times for

different responsibilities in mixed appointments are under consideration.

To my mind the importance of this matter is increasing continually with the tendency of many District Councils to advocate a reduction in the amount of time to be devoted by District Medical Officers of Health to their duties. It was illuminating when the recent review of districts was undertaken by County Councils under Section 111 of the Local Government Act to note this tendency. Quite recently within my own experience on at least three occasions when appointments of District Medical Officer of Health were being made, the District Councils concerned, instead of emphasising the importance of their public health functions as was the case in the past, suggested reductions in the time necessary for their Medical Officer of Health to carry out his duties, and in one case a Rural District Council stated quite categorically that they no longer required a Medical Officer of Health. Even in the case of a large Borough the representatives wished the time to be reduced from 50% of whole time devoted to Borough services to 25%.

There appear to be two main factors influencing District Councils to adopt this new approach—(i) the feeling that as a result of the National Health Service Act the duties of a District Medical Officer of Health have been substantially reduced, and (ii) the effects of the Industrial Court Awards.

Effects of National Health Service Act, 1946

The effect of the operation of the National Health Service Act on the work of the District Medical Officer of Health *as such* has not been of particular significance. Those District Councils, Boroughs and Urban Districts which exercised powers under the Education and Maternity and Child Welfare Acts suffered losses in the transfer of school health and maternity and child welfare services to County Councils, but from the point of view of environmental and sanitary services little change took place. Certain District Councils which were hospital authorities for infectious diseases had their hospitals transferred to Regional Boards, but the tendency to exaggerate the diminution of duties of the District Medical Officer of Health as compared with those exercised prior to 1948 is unjustified. Indeed, the full exercise of functions which now fall to the District Medical Officer of Health, including health education and new duties under the National Assistance Act, 1948, would result in most districts in an increase of his work. When, therefore, a Local Sanitary Authority seeks to reduce the amount of time to be devoted to public health functions of the Medical Officer of Health it is of importance to emphasise that environmental and sanitary services and other allied work is as important and comprehensive as ever it has been.

Industrial Court Awards

The awards of the Industrial Court in relation to the salaries of various classes of medical officer have undoubtedly contributed to the tendency for Local Sanitary Authorities to try to reduce the amount of time devoted by Medical Officers of Health to their duties. This is particularly the case where the Medical Officer of Health holds a mixed appointment and acts either as an Assistant County Medical Officer or as a Senior Medical Officer to the County Council. The salaries for the two latter types of appointment are on a lower scale than those of the average combination of districts served by a District Medical Officer of Health, and it is, therefore, of financial advantage not only to the Local Sanitary Authorities but to County ratepayers as a whole to reduce to the minimum the amount of time allocated to the Medical Officer of Health for his sanitary duties.

Whilst this effect was never intended by the Industrial Court, and was certainly not in the minds of the Staff Side when the claim was presented to the Court, it has become an increasingly important factor in the place of the District Medical Officer of Health in the National Health Service.

There is another important aspect of this financial side. It is related to the method of combination of District Councils together on the one hand and with the County Council on the other in connection with appointments of District Medical Officers of Health. Should the aggregations of districts in a mixed appointment be small in size and population in order to give as many Medical Officers in the service as possible an insight into environmental and sanitary services with a somewhat better salary than they would enjoy as Assistant Medical Officers, or should the aggregations be large enough to occupy, say, not less than 50% of the time of a mixed appointment with consequently fewer jobs as District Medical Officer of Health but carrying a much better salary? In other words, should the financial advantage of the higher salaries of Medical Officers of Health be spread amongst a larger number of Medical Officers with possibly improved prospects of recruitment and wider interests for the greater number?

This is not just a theoretical consideration but a very real one which obtruded itself very forcibly in the recent review of County Districts by County Councils, and it is one which, if the present system of local government and the present distribution of public health functions continue, will force itself more and more to the front. Many District Councils, as I have already mentioned, are fully alive to the financial implications of the former alternative, and there are many considerations other than financial which make it an attractive method of organising combinations of environmental and personal health functions into a series of comprehensive jobs for a large number of Medical Officers in the service. This is a subject in itself and it is not possible to enlarge upon it further. It does, however, merit the closest examination by District Medical Officers of Health in order that they may be prepared to give a constructive opinion.

Relationship with Sanitary Inspectors

The relationship of the County District Medical Officer of Health to the Sanitary Inspectors employed by his Authorities must be mentioned because of certain trends. In accordance with Article 27 (1) of the Sanitary Officers (Outside London) Regulations, 1935, a Medical Officer of Health is responsible for directing generally the performance of all duties imposed on the Sanitary Inspector by Statute, Orders, Regulations or By-laws. The Medical Officer of Health, therefore, must supervise generally the work of the Sanitary Inspector whatever its nature may be.

It has been argued and is being said with increasing force that certain of the duties of the Sanitary Inspector are so technical and require such special training that only he is capable of carrying them out, for example, meat inspection. This argument is then carried a step further. The Sanitary Inspector should be an independent officer with a direct relationship to his Local Authority and subject to no supervision or interference from the Medical Officer of Health.

I disagree with this contention most emphatically. The Sanitary Inspector, like his other professional colleagues, medical, dental, nursing and ancillary in the health service, is a member of a team and the professional head of that team is the Medical Officer of Health. There is no essential difference between the work of the Sanitary Inspector in safeguarding an individual from illness caused by the consumption of infected meat and that of the Health Visitor in dealing with wrong methods of infant feeding or bad ante-natal care. Each is specialised and the threads of each specialty must be woven together into a practical pattern by the Medical Officer of Health.

Unfortunately in many districts the Medical Officer of Health has remained passive in relation to many functions affecting the health of the people; the Sanitary Inspector has been the active officer, as indeed he should be, but frequently to the exclusion of the Medical Officer of Health. The remedy is a simple one; the District Medical Officer of Health should take an active interest in all facets of the environmental and sanitary services, and by his action should continually make it apparent that he is the officer ultimately responsible for dealing with factors adverse to health, whether they come into the category of nuisance, tents, vans and sheds or poliomyelitis.

This is not just an attempt to assert authority, to prevent transfer of functions or to boost the importance of the Medical Officer of Health. It is of the utmost importance, particularly to-day with the divided administration of the health service and the tendency for the units to drift apart, that within the preventive service there shall be unity of approach to problems, environmental or personal, which are likely to influence the health and well-being of the individual and the community. The obvious way to obtain the greatest advantage from the services of professional and technical officers working in the service is for their efforts to be pooled so that they shall form units of a complete machine, the operation of the machine being directed by a professional colleague with a knowledge of their work and full sympathy with their aims.

Attempts to divide the work amongst a series of independent technicians can have only one ultimate result ; the work will be co-ordinated and directed by a lay administrator with technical advice from professional officers. The pros and cons of such an arrangement are already well known to you from discussions in the past, and it is the general opinion of the Society of Medical Officers of Health that such an arrangement would be detrimental to the service which is, or ought to be, essentially humanitarian in its outlook and free from rigidity in its approach to problems of ill-health and suffering.

One other point which has occurred to me in connection with the relationship of the County District Medical Officer of Health and the Sanitary Inspector is the amount of space usually devoted in the Annual Report of the Medical Officer of Health to the report of the Sanitary Inspector. It is not uncommon to find when perusing the report of a District Medical Officer of Health, particularly of an Urban or a Rural District, that the bulk of the report deals with the sanitary circumstances of the area from the angle of the Sanitary Inspector and of the action taken by him in dealing with adverse factors. I am not suggesting that the work of the Sanitary Inspector should not be afforded prominence in the Annual Report of the Medical Officer of Health, but I think that in reporting on the health conditions of the area, particularly those relating to matters concerning nuisances and action in connection with food offences, it is not essential that the work done and the comments upon it should appear as entirely those of the Sanitary Inspector. If the Sanitary Inspector is a member of the team, and if the District Medical Officer of Health is ultimately responsible for all the health conditions of the area, only highly specialised items need be dealt with as the sole prerogative of the Sanitary Inspector.

Relationship with the County Council and the County Medical Officer of Health

The health services of the County Council are, in general, personal health services related to the health of the individual —the infant, the child, the mother, the elderly—whilst those of the District Council are essentially environmental. These generalisations have, of course, exceptions, but they reflect on the whole the general trend.

In these circumstances it is essential that there shall be the closest cooperation between the Local Authorities concerned, but it is equally important that the independence of Authorities of Sanitary Districts shall be completely respected, and most District Councils ensure that attempts at encroachment upon them by the County Council or by Government Departments are prevented. Generally speaking, the same conditions apply to the officers employed by the respective Local Authorities but, as mentioned previously, there is already a tendency on the part of District Councils to be not quite so particular in safeguarding their public health functions. It is therefore of great importance that there should be no encroachment on the sphere of the District Medical Officer of Health. I think as a rule the County Medical Officer of Health is fully aware of the importance of working in close co-operation with the District Medical Officer of Health, and also of refraining from even appearing in any way to interfere with his functions or duties. One of the disadvantages of this relationship is that there may be a lack of that close co-operation in the work which is so essential because of the desire of the County Medical Officer not to interfere and of the tendency of the District Medical Officer of Health to resent anything which may appear to savour of encroachment.

This leads me to mention the whole question of decentralisation of health services under the National Health Service Act. As you are aware the recent memorandum of the Ministry of Health on the further review of County Districts under Section 111 of the Local Government Act repeated the injunction that every effort should be made to ensure that the District Medical Officer of Health should play a part in the operation of the personal health services of the County Council, and the importance of this dual function was given emphasis. Many of the mixed appointments include the District Medical Officer of Health as an Assistant County Medical Officer, and therefore the requirements of the Ministry and of common sense are met by the dual appointment to the District Council and to the County Council. It is when appointments of Divisional or Area Medical Officers are made that there has been a considerable difference of opinion as between District Medical Officers of Health and County Councils regarding the amount of decentralisation of County Councils' functions. In many areas where decentralisation is said to exist, the amount of work which actually devolves upon Divisional or Area Medical Officers and upon Divisional or Area Sub-committees is small, and conferences have been held within the Society between the County District Group and the County Medical Officers Group to try to arrive at some agreed formula for divisional administration. The document which was produced as a result of these consultations was a compromise, and I think it is true to say that in many Counties the services would benefit and Divisional Medical Officers would have wider responsibilities and interests if further decentralisation were to be undertaken.

The ideal to be aimed at is that whilst the County Council reserve to themselves the right to determine policy and to maintain control of expenditure, they should give Divisional or Area Sub-committees freedom of action in day-to-day administration. At officer level Divisional or Area Medical Officers and their staffs should be encouraged to make their own decisions and solve their own problems. If the local work of the health services is undertaken by members and officers working from a fund of local knowledge and experience, the service, in which individual needs and circumstances count for so much, will benefit.

The Future

It has been suggested by many organisations and persons that the only method of administering the local and domiciliary health services is through complete delegation of most of them to District Councils. As evidence in favour of this contention, the records of many Borough and Urban District Councils as health authorities in the past have been used, and it has been pointed out that prior to the National Health Service Act, services which were essentially local, like maternity and child welfare, domiciliary nursing, domiciliary midwifery, and the school health service, had been competently administered by many Borough and Urban District Councils, and that therefore no good purpose had been served by their transfer to County Councils.

As against this contention it should be pointed out that it is of advantage to have a co-ordinating authority and to have general policy for a wide area determined by elected members who are not necessarily swayed by parochial requirements; it is also helpful in securing a relatively even distribution of the benefits of a health service over a wider area. Specialised medical and technical staff can be provided more economically and their work can be directed in accordance with the decisions of the policy-making authority over a large enough area to ensure efficiency in the service with the fullest measure of economy.

Certain Associations of Local Authorities—the Rural District Councils Association, the Urban District Councils

Association and the County Councils Association—have, after long discussion and negotiation, evolved suggestions for the reform of local government which would enable extensive delegation to District Councils to be carried out, and whilst the County Council would have certain powers in relation to the degree and amount of delegation, District Councils would, in certain circumstances, become responsible for the local services. This policy has not been agreed by the Association of Municipal Corporations and there is therefore still a marked division within the ranks of Local Authorities as to what the future constitution of local government should be, not only in reference to the health service but to other services of Local Authorities. This is unfortunate, since failing agreement by Local Authorities themselves as to their future, either the present conditions must continue, with all their disadvantages, or a solution will have to be imposed either through an independent tribunal or by the Government.

With all the differing opinions and the warring elements within the local government service itself, it is difficult to forecast what may be the future of the Local Health Authority part of the National Health Service or of the health services of Local Sanitary Authorities. The tendency may be to evolve a series of relatively small Authorities charged with responsibility for local and domiciliary health functions, and for many of the duties at present undertaken by County Councils and their officers to pass to District Councils. In the future, therefore, it may be that the District Medical Officer of Health, instead of combining functions in connection with the environmental health services with those of the personal health services in a dual capacity, may find that his Authority and he himself are in full charge of services in his area.

On the other hand it is not unlikely that in the course of time a drastic reorganisation of the whole of the National Health Service may have to be undertaken owing to the disadvantages and difficulties which flow from the tripartite form of administration, and that all the services now administered by Local Authorities of various kinds may, with those of Regional Hospital Boards and other Authorities, be welded together into one all-purpose organisation.

It is always unwise to indulge in prophecy, and it is particularly unwise to do so in relation to government, whether central or local, but I would venture to suggest that the place of the District Medical Officer of Health, which I have tried to show is of very considerable importance to-day, will be enhanced in the future by a closer knitting together of the various forms of health service for which he will be functionally responsible. It is for this reason that I emphasise the great importance of the County District Group of the Society of Medical Officers of Health ensuring that the value of the work of District Medical Officers of Health, even in its present narrow sphere of environmental and sanitary conditions, should be kept before their Councils and the public, and that encroachments either by officers within their own Authorities or from outside should be resisted. If there is to be in the future a combination of all local and domiciliary health work under the immediate aegis of smaller local government units, the person to deal with the work is the District Medical Officer of Health. By means of mixed appointments, as at present constituted, he is being kept in touch with all the trends in connection with personal health services, and should therefore be qualified to accept complete responsibility for them if and when the time comes for him to do so.

Members of the Society are invited to attend a symposium on " Smog " at the meeting of the Royal Meteorological Society to be held at 49 Cromwell Road, London, S.W.7, on Wednesday, January 20th, at 5 p.m. (tea 4.30 p.m.). Dr. O. G. Sutton, C.B.E., F.R.S., President, will take the chair, and speakers will be Mr. H. W. L. Absalom, Meteorological Office, Dr. E. T. Wilkins, Fuel Research Station, and Dr. C. M. Fletcher, M.R.C. A general discussion will follow.

A MODERN APPROACH TO TUBERCULOSIS*

By A. H. D. CHALKE, O.B.E., M.A., M.R.C.S., L.R.C.P., D.P.H.,
Divisional Medical Officer.

Thirty years have passed since local authorities were made responsible for establishing schemes for the prevention of tuberculosis. As first envisaged they were " clinical " rather than " preventive," but, fortunately, wiser counsel prevailed. Is the concept becoming once again too clinical ?

We in the public health service must advance our ideas in accordance with changing treatment. We must not forget that the rapidity of modern treatment allows much less time than formerly for physical and mental adjustments to establish themselves, and for the patient to be taught and to learn the principles of prevention. The public awareness of what tuberculosis means and how it can be prevented cannot have been lower for many years past ; this is in line with the scant regard being paid generally to the promotion of health nowadays, and to the undue emphasis being placed on illness and treatment. B.C.G. vaccination is about to expand in this country, and we must expect that this will remove the spotlight still farther from personal preventive measures. This will need to be combated with vigour ; indeed, far more attention must be paid to the health education of the public—especially the young—than has been the case recently.

Pulmonary tuberculosis is becoming a " tablet disease," in which the bacillus is being attacked rather than the disease itself. Resistant strains are emerging and, despite the assurances of our clinic colleagues, the danger of infection of contacts with these organisms appears to be a very real one. Mass miniature radiography is getting more and more members of the public into its net ; but many units seem to be concentrating on numbers rather than on susceptible groups—such as those from general practitioners—where the yield is known to be high. Until more units are available this haphazard examination is wasteful. The help of these units should be sought as a routine when a case of tuberculosis occurs among the staff or pupils of a school, or—but this is more difficult—in a factory. Many cases are coming to light which formed part of the unknown infector pool—which is most valuable ; but we may ask ourselves : how many of the notified cases of to-day would formerly have undergone spontaneous cure ? And, again, does the increase in notifications represent a real increase in incidence ?

The expansion of tuberculin-testing is another forward step, not only as an additional epidemiological pointer, but also as a new case-finding measure. It is being used as a routine in an increasing number of child welfare and school clinics ; and its use may well be extended. This is bound up with the wider use of B.C.G., and the Jelly and Mantoux test controversy. That the Jelly test has its shortcomings is not disputed (and so has the Mantoux !) ; but it is far more suitable in many ways than the intra-dermal for routine testing of infants. It is in the explanation to mothers as to the significance of a positive or negative result—no easy matter—that the clinic doctor and health visitor must be well briefed. By arrangement with the chest physician all the family contacts of positive reactors should, if possible, be persuaded to attend for *x*-ray examination, whilst the child is seen at the chest clinic. The health visitor should endeavour to trace the infecting case—it may be the woman next door or the proprietor of the sweet shop on the corner !

The Ministry's views about the employment of open cases of respiratory tuberculosis in industry have been vigorously challenged, and it is understood that the circular is to be reconsidered. I believe that it is the sheltered workshop run by the local authority which is the best answer we have at the moment to this problem ; but it appears that those in high places will not consider this on the grounds of expense. It is better, nevertheless, and logical, to pay a patient to do a little work, than to subsidise his idleness.

---

* Synopsis of address to the Refresher Course for County District M.O.H.s, London, September, 1953.

Accurate notification of tuberculosis is essential if preventive measures are to be planned properly. Despite its 40 years' existence, statutory notification of this disease has become almost a farce ; for, one in six (in some places one in three) tuberculosis deaths occur in those not previously notified. Hospital doctors are the greatest sinners and London has about the worst record in this respect. (The gradual elimination of medical superintendents may have something to do with it.) Is it not about time that penalties for failure to notify were enforced ?

The general practitioner is the fountain from which nearly all chest clinic patients spring ; but are we doing enough to keep him in the picture ? In these days of tablet swallowing at home, and a shortened sojourn in sanatorium, it is more necessary than ever that the link between the surgery and the clinic should be very tight. Very often, all that the G.P. is called upon to do is to sign certificates, even though he is not being kept informed as to what is actually happening to the patient. I am doing everything I can to improve the contact between the practitioner and the tuberculosis visitor, by arranging, in conjunction with the chest physician, for her to offer to call on the newly notified patient's doctor to discuss the social aspects of the case. Periodic consultations can then be arranged. There should be unlimited *x*-ray facilities for general practitioners (but not at the chest clinic), even though, at first, the response is poor.

The part played by housing in the epidemiology of tuberculosis is still by no means clear. He would be a bold man who would assert that too much stress has been laid on bad housing in this connection, but the fact remains that even in households where the living conditions are poor and the infectious patient has no bedroom to himself, the majority of contacts seem to escape disease if not infection. Contacts in " good " houses are really only slightly better off. Health education pays in the cottage as well as in the castle. He would be bolder still who would recommend giving housing priorities to the non-tuberculous rather than to the affected, but there is a great deal to be said for it. In any case, are we using the priorities allocated to the tuberculous to the best advantage ? I doubt it. It appears that the common procedure is to divide the infectious tuberculous into two broad groups : those in which the patient has a separate bedroom, and those in which he has not. This is clearly indefensible. The system I have devised may overcome these objections. It is still a little experimental, but I believe that already it is proving fairer and less time-consuming than the old system which rehouses an old man and his wife and grown-up daughter, and ignores the early patient with adolescent children. By this means tuberculous families are divided into five priority groups. I shall be only too happy to give fuller details to anyone interested. (See Appendix.)

Finally, the present organisation is difficult enough without making it more difficult by arguing about its shortcomings. Cohesion can be obtained only by close personal contact, and by a determination to make the scheme work. What will happen when the present vintage of chest physicians—most of them brought up in public health departments—is replaced by the *pure* chest pysician, I am unable to conjecture.

APPENDIX

Confidential.

PREFERENTIAL REHOUSING FOR TUBERCULOUS FAMILIES (Respiratory).

Name of Patient(s)..... Age.....
(Whether in Sanatorium : Yes/No)

Address .....

Name of Applicant.....
(If different from above)

Address .....

			*
I. Sputum.			
i. *Sp. Pos.*	Early case sp. pos. within the last year, who may become sp. neg. as a result of treatment... ...		8
ii. *Sp. Pos.*	Chronic case unsuitable for treatment. Unlikely to become sp. neg.		10
iii. *Sp. Pos.*	Chronic case, may become negative after further treatment		8
iv. *Sp. Pos.*	Moderately advanced. Sp. pos. within last year		8
v. *Sp. Neg.*	Moderately advanced case : tubercle bacilli have not yet been found in the sputum		8
vi. *Sp. Neg.*	Minimal or slightly more than minimal case : sputum has always been negative : good prognosis...		4
vii. *Sp. Neg.*	case. Sp. pos. three or more years ago, negative since		2

II. Family Contacts. (If notified case of tuberculosis, please add P. = Pulm. N. = Non-pulm.)

i. Number aged 0 to 1	One		6
	Two		9
ii. Number aged 1 to 16	One		2
	Two		5
	Three		7
	Four or more		10
iii. Number aged 17 to 35	One M		2
	F		6
	Two M		3
	F		9
	Three M		4
	F		12
	Four or more M		5
	F		15
Total persons in house			*
III. Standard of patient and contacts in respect of precautionary measures and co-operation.	Good		12
	Fair		6
	Poor		0
IV. Is rehousing likely to aid improvement or recovery ?	Yes/No		4
V. Standard of present housing. (Please tick all items that apply)			
Dampness	Yes/No		2
Kitchen shared with other occupants	Yes/No		8

* Marks added in the Public Health Department. Those shown are suggestions only and are liable to alteration in the light of experience.

Lavatory shared with other occupants	Yes/No		8
Outside water tap only	Yes/No		8
House shared by other families with children	Yes/No		12
Is separate bedroom *available* for patient ?	No/Yes		12
Total marks...			

Any other relevant factors, medical and social.

THE MEDICAL OFFICER OF HEALTH AND THE CHEST PHYSICIAN*

By KENNETH MARSH, D.M.,
Chest Physician, Camberwell

Since the introduction of the National Health Service when the tuberculosis service was put under the control of the Regional Hospital Boards, the relation between the chest physician and the Medical Officer of Health for either a borough or a county has altered considerably and, in far too many cases, has altered for the worse. The fact that tuberculosis is an infectious disease and as such is a preventable disease seems to be no longer recognised and too often the chest physician concerns himself purely with clinical matters : conversely the Medical Officer of Health, who should be in a position to assess the epidemiological state of any particular disease in his area, at any particular time, is now not kept as fully informed as he should be. This remark applies not only to tuberculosis but to outbreaks of " D and V," whooping cough and poliomyelitis. Too often the cases are treated by the clinician and the fact that the condition is infectious and notifiable, although recognised, does not lead to any action, least of all to notification. One in three deaths due to tuberculosis are not notified when the patient dies in a hospital in some areas. This proportion would very soon be altered if the consultant in charge of the case was prosecuted and fined the statutory sum of £5.

In many areas the Medical Officer of Health is responsible, usually through his nursing officers, for maintaining the supply of clinic health visitors. He is also responsible for procuring a satisfactory cooperation between the medical officers of the School Medical Service, the ante-natal and child welfare departments and the medical officers whose work is connected with the examination of mentally defective children. All these medical officers and medical ancillary services can be made to play a most useful part in the diagnosis and prevention of tuberculosis, but the closest cooperation is necessary on the part of the chest physician, who must think in terms of the spread of the disease not just within a unit such as the household, the school or the factory but within the community. He must impress upon his colleagues the relative value of the modern means of diagnosis, and where the processes are inadequate, the deficiencies and the possible remedies. " Draining the infector pool " is a long and tedious process and at the moment, especially in the London area, it is not proceeding as satisfactorily or as rapidly as many would like. In Camberwell, which has a population of 181,000, the following methods of case finding are carried out. Patients are referred to the chest physician when they consult their general practitioner with symptoms. It is from this group that the highest incidence of active pulmonary tuberculosis is obtained. There is also an arrangement whereby the general practitioner can receive a report on a chest *x*-ray and the patient is only recalled if anything abnormal is seen. This system is useful where the mass *x*-ray unit is operating in a rather distant part.

* Synopsis of address to the County District M.O.H. Refresher Course, London, September, 1953.

With the cooperation of the medical and nursing staff of the ante-natal clinics, routine chest *x*-rays of all pregnant women attending can be carried out. These centres are useful places for adult health education. In school welfare clinics, the routine tuberculin patch-testing of children has led, in many cases, to the discovery of unknown cases of active pulmonary disease. The closest cooperation between health visitor, district nurse and tuberculosis health visitor is necessary here in persuading all the contacts to attend the chest clinic for chest *x*-rays or tuberculin-testing. Sporadic testing, however, will not get anywhere and it has been decided in Camberwell to do routine testing of all pre-school children once a year. Useful information about conversion rates and their possible variations in different social levels should be obtained eventually. The possibility of extending the scheme to *all* schoolchildren must be considered.

Very little is known about the risks of infection in tuberculosis from workmates and from such people as bus conductors, liftmen, receptionists and other people that a worker may come in contact with, albeit for a very short time, in the course of his day's journey from home to workplace and back again. In an endeavour to tackle part of this problem it has been arranged that when a patient is notified as suffering from tuberculosis, a similar " notification " excluding the patient's name but stating his place of work, is sent to the Medical Officer of Health of the area of the works. It is hoped that the M.O.H. will inform his local chest physician or director of the mass *x*-ray unit, and that they will endeavour to examine the workpeople at risk. Mass *x*-ray units under the supervision of the Regional Hospital Board all too frequently concentrate upon examining school leavers, adolescents in factories and patients referred to them by general practitioners. These patients frequently only require a chest *x*-ray for reassurance. If mass *x*-ray units were under the control of the Medical Officer of Health, who would use them as shock troops, he could arrange to *x*-ray groups where new cases of tuberculosis arise. He could also *x*-ray such places as common lodging-houses, reception centres and any other institutions where elderly patients are apt to congregate. Many such centres are under the jurisdiction of local authorities and are the responsibility of the Medical Officer of Health.

What other means can the chest physician and th Medical Officer of Health devise for *x*-raying more cases ? Dr. Chalke has described his special housing application form that he has drawn up for tuberculous patients. If anybody applies to be rehoused on the grounds of any pulmonary disability one of these forms has to be completed. It frequently happens that the applicant is not known at the chest clinic and is applying because his doctor has suggested that he has bronchitis ! In cases unknown to the clinic, it is frequently possible to persuade a large number of members of the family to have chest *x*-rays before the housing application form is completed. But the most satisfactory method and one which has hardly been tried in a serious way, chiefly because of the expense, is propaganda. Films, film-strips, talks at clubs, schools, factories, more official propaganda on the radio and television, on hoardings, in buses and trains. The success of the diphtheria immunisation drive should be a constant spur to everyone to stamp out tuberculosis. It is profoundly to be hoped such a propaganda drive will not be long delayed, or held up by the objection that there are not enough sanatorium or hospital beds. Tuberculosis begins in the home, breeds in the home and in very many cases can be treated in the home, and only by propaganda directed to the home can the fear of the disease, and the ignorance, be removed.

The Medical Research Council announce that the Wernher Research Unit on Deafness, supported from funds made available to them by the Alexander Pigott Wernher Trust, has been transferred to new quarters at King's College Hospital Medical School, London, by arrangement with the Council of the School. Mr. Terence Cawthorne, F.R.C.S., will act as Honorary Clinical Director, and Dr. T. S. Littler continues to be Director of the Unit.

HEALTH EDUCATION OF THE PUBLIC ITS PRESENT SCOPE AND FUTURE GROWTH*

By Dr. JOHN BURTON,

Director, The Central Council for Health Education

Health Education has evolved rapidly in recent years because the public health problems of to-day cannot be solved without it.

The sanitary history of the last 200 years has been the story of combating bacterial disease under a system of "Medical Police" involving control of the individual. This necessitated improving food supplies, imposing quarantine, building waterworks and sewerage. The co-operation of the citizen was only required to the point of paying rates and taxes. The success of these great sanitary reforms revealed a new epidemiology which began to emerge 100 years ago. Health workers then began to see that State sanitation was not enough. The new problems were personal and as this phase progressed the responsibility of the individual for his own and his community's health became more apparent.

To-day the quality of human relationships has become an issue for preventive medicine. The personal habits of food handlers are as much the concern of sanitary authorities as the raw materials they handle. The design of shoes by manufacturers and choice of shoes by parents are emerging as major considerations in preventive orthopaedics.

What is Health Education? It can be defined as the art of utilisation of knowledge about physical, mental and social well-being. But this must not give the impression that Health Education is a substitute for Public Health or Social Services, but it is one of the most important tools in making them effective.

Health Education has as many facets as there are health problems, and each community must define the scope of activity for itself. Among the main contemporary problems of social medicine in all countries are :—

1. The quality of child care—not so much the reduction of infant mortality as improvement of parental values in physical and mental aspects involving changes in allocation of the family budget from cigarettes and football pools to good food and good footwear, or questions of anxiety and affection in family relationships.

2. Maintenance of nutrition—meaning not the combating of starvation so much as the maintenance of essential nutrients.

3. Prevention of accidents—in the home, on the roads, in industry through a changed attitude on the part of the community and demand for elimination of known hazards, plus willingness to finance preventive measures.

4. Promotion of environmental hygiene—a problem still in the vanguard with atmospheric pollution, water supplies and sewerage.

5. Basic education in human biology. People are interested in themselves and other people, and if biological study is to be useful it must start with man and teachers must be trained in proper study.

6. The doctor - patient relationship. Doctor means teacher, and neither in his training nor his practice is this vital aspect of his relationship with his patient considered. Nor has the doctor time or training in many cases to perform his teaching role. In this relationship the education of the patient is just as important as that of the doctor.

7. Mental Health. In relation to neurosis we are in a position only to be compared with the situation of infectious diseases before the great sanitary reforms. We are building institutions to treat casualties and we have hardly scratched the surface of prevention.

8. Achievement of 100% immunity. Although immunising agents are constantly being introduced large sections of the public are still unprotected.

9. Rehabilitation of the injured and aged. The new outlook on the aged and disabled has been one of the major events of 20th century medicine.

These few examples are given, not as material for self-congratulation on progress, but so that they may be considered in the light of whether new problems can be tackled effectively without new techniques.

It is frequently said that adults are not interested in health. As a generalisation this is probably true. The problem is not then how shall we interest people in health? But how can their existing interests be related to those problems of public health which are frustrating a richer individual and community life? It is on this point of turning interests into action that Health Education with its special approach has something to offer.

* Synopsis of an address to the County District M.O.H. Refresher Course, London, September, 1953.

OBITUARY

THOMAS YULE FINLAY, M.D. (Edin.), F.R.C.P.E.

Dr. T. Y. Finlay, formerly maternity and child welfare medical officer in Edinburgh, died there on November 28th, in his 72nd year. He graduated M.B., Ch.B. at Edinburgh University in 1907, proceeded to the M.D. in 1912, and was elected F.R.C.P.E. in 1927, having taken the M.R.C.P.E. in 1922. A brother-in-law of Variot of Paris he, early in his medical career, came under the influence of J. W. Ballantyne and John Thomson, who encouraged his interest in the welfare of children and under their stimulation undertook original work on the nutrition of infants. He was appointed the first medical officer in charge of the maternity and child welfare section of Edinburgh public health department in 1919, and remained head of that section till he retired in 1947. His greatest achievements were in extending the scope of his own section and in knitting together in a happy way both official and voluntary organisations working on behalf of mothers and children. He was a firm believer in the value of health visiting and was associated with the teaching and training of health visitors when such was begun in Edinburgh in 1922.

He joined the Society of Medical Officers of Health in 1923 and became a Life Member in 1948. He took an active interest in the Maternity and Child Welfare Group of the Society and was its President during session 1933-34, and when that group held a

NAPT

Medical Officers of Health

planning

Health Exhibitions

should use the new series of NAPT mass X-Ray propaganda material including posters and leaflets; also display panels dealing with the prevention and treatment of tuberculosis.

Write now for price list and hiring charges.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

TAVISTOCK HOUSE NORTH, TAVISTOCK SQUARE, LONDON, W.C.1.

refresher course in Edinburgh in 1939 he was the guiding spirit behind the scenes. This was typical of the man. Quiet and unassuming, he shunned the limelight and his sterling qualities were really only known to those who had the closest contact with him.

SOCIETY OF MEDICAL OFFICERS OF HEALTH

NOTICES

METROPOLITAN BRANCH

President : Brigadier A. E. Richmond, C.B.E.

A meeting of the Branch will be held at B.M.A. House, Tavistock Square, London, W.C.1, on Friday, January 8th, 1954, at 5.30 p.m.

Mr. Basil Henriques, C.B.E., J.P., will give an address on "Changing Social Problems in London."

All members of the Society are cordially invited to attend.

F. M. DAM,
Hon. Secretary.

Town Hall,
Hammersmith, W.6.

SERVICES GROUP

President : Dr. G. M. Frizelle, T.D.

The next meeting of the Group will be held in Room 310, London School of Hygiene and Tropical Medicine, at 5.30 p.m., on Friday, January 22nd, 1954.

The Presidential Address, entitled "The Services Group, Past, Present and Future," will be delivered by Dr. G. M. Frizelle.

By kind invitation of the Commandant (Major-General F. C. Hilton-Sergeant, Q.H.P.) the February meeting of the Group will be held at the Royal Army Medical College, Millbank, London, S.W.1, on Friday, February 19th, 1954, at 7.30 p.m. Light refreshments will be served in the College Library from 9 p.m.

Entrance to the College is from John Islip Street (which runs from the rear of the Tate Gallery to Vauxhall Bridge Road), past the Guard Room, No. 18 Company, R.A.M.C. Cars may be parked on the Barrack Square.

The March meeting, which will also be the Annual General Meeting, will be held on Friday, March 19th, 1954.

R. F. GUYMER,
Hon. Secretary.

London School of Hygiene and Tropical Medicine,
Keppel Street,
(Gower Street),
London, W.C.1.

SCHOOL HEALTH SERVICE GROUP

President: Dr. Mary Gilchrist.

A meeting of the Group will be held in the Old Library, B.M.A. House, Tavistock Square, London, W.C.1, on Friday, January 22nd, 1954, at 4.30 p.m. Speaker to be announced.

A. A. E. NEWTH,
Hon. Secretary.

28, Chaucer Street,
Nottingham.

OFFICIAL NOTICES

City of Nottingham Education Committee

PRINCIPAL SCHOOL MEDICAL OFFICER

Applications are invited for the appointment of Principal School Medical Officer, on a salary scale of £1,250, rising by annual increments of £50 to £1,650 per annum.

The appointment will be subject to the provisions of the Local Government Superannuation Acts.

Further particulars and forms of application may be obtained from the undersigned, to whom completed applications must be returned not later than January 16th, 1954.

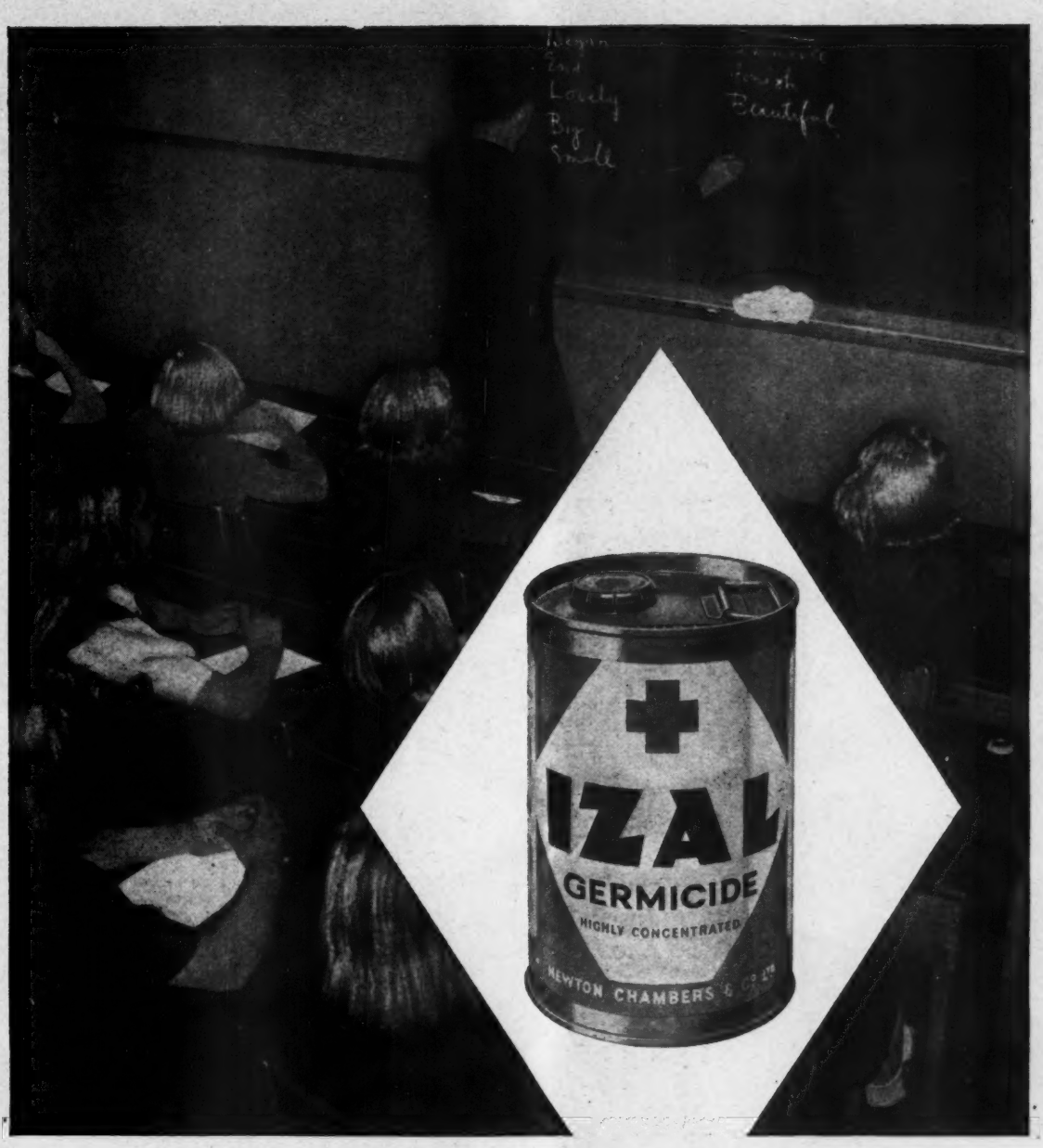
F. STEPHENSON,
Director of Education
Education Offices,
Nottingham.

The
BEATSON MEDICAL

A bottle of quality. The retention of the vial lip for easy pouring is combined with all the advantages of modern design, including the elimination of internal sharp corners allowing rapid dispersal of sediment.

★ **Plain or Graduated**
Cork Mouth or Screw Capped

BEATSON, CLARK & CO. LTD
GLASS BOTTLE MANUFACTURERS
ROTHERHAM · *Established 1751* · YORKS



Safeguarding public health—to protect people in public buildings from the risk of infection, hundreds of Local Authorities throughout the country regularly use IZAL Germicide.

NEWTON CHAMBERS & COMPANY LIMITED, THORNCLIFFE, SHEFFIELD

For suppression of severe cough

'Physeptone' depresses the cough reflex in a manner comparable with that of diamorphine. It may therefore be prescribed with advantage for those cases of persistent cough which would normally be given diamorphine.

For this purpose, 'Physeptone' Linctus is issued containing 2 mgm. of Methadone (Amidone) Hydrochloride in each fluid drachm. The average adult dose is one teaspoonful (2 mgm.) every three or four hours, and this will control nearly every cough.

For children 'Physeptone' Linctus should be diluted with simple syrup in the proportion of one part linctus and seven parts syrup. One to two teaspoonfuls (0·25 - 0·5 mgm.) of this *diluted* linctus to be given according to the age of the child.

'PHYSEPTONE' LINCTUS

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd.)* LONDON

Printed by H. R. Grubb, Ltd., Croydon, and Published by The Society of Medical Officers of Health, Tavistock House South, Tavistock Square, W.C.1.